NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Activity 6.2

We want to conduct a **matched-pairs** experiment in which we test the effect of step height on heart rate. We have 28 student volunteers for the experiment. We want to see whether a step height of 6” or 12” has a greater effect on the students’ heart rate. We will measure the students’ heart rate before and after each step height and compare the differences.

1. Design the experiment below:
2. We now need to randomly assign our subjects to the treatment groups. CLEARLY DESCRIBE how we would do this (give instructions)
3. Treatment 1 = 6” first, then 12” 🡨 Circle which treatment you were assigned to

Treatment 2 = 12” first, then 6”

1. Take your pulse for 60 seconds. Record it here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. We will now begin our experiment. When it’s your turn, you will step up and down on the given step ***(at the pace given by the teacher)*** for 3 minutes.
3. Record your information below:

TRT. # Resting 6” After 6” **6” DIFF.** Resting 12” After 12” **12” DIFF DIFF (12” – 6”)**

**\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_** \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

1. Did your pulse rate increase more when you used the higher step?

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TRT. # Resting 6” After 6” **6” DIFF.** Resting 12” After 12” **12” DIFF DIFF (12” – 6”)**

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1. Did your pulse rate increase more when you used the higher step?
2. Add your data to the class chart on the board.
3. Create a histogram of the **DIFFERENCES BETWEEN THE 12” and 6” step (last column of the chart)**
4. Briefly describe the plot above (shape, center, spread, gaps, peaks, etc.)
5. Since we **expect** the 12” step to create a **higher** heart rate than the 6” step, what types of values do we **expect** for the differences? (positive or negative)
6. Calculate the class average for the **DIFFERENCE** **BETWEEN** the 12” and 6” steps: \_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. *Using the info in the previous 2 questions,* is their evidence that heart rate increases more with greater step height?? ***EXPLAIN*** *(use the plot too!)*
8. Add your data to the class chart on the board.
9. Create a histogram of the **DIFFERENCES BETWEEN THE 12” and 6” step (last column of the chart)**
10. Briefly describe the plot above (shape, center, spread, gaps, peaks, etc.)
11. Since we **expect** the 12” step to create a **higher** heart rate than the 6” step, what types of values do we **expect** for the differences? (positive or negative)
12. Calculate the class average for the **DIFFERENCE** **BETWEEN** the 12” and 6” steps: \_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. *Using the info in the previous 2 questions,* is their evidence that heart rate increases more with greater step height?? ***EXPLAIN*** *(use the plot too!)*